

that is authorized to operate in the same frequency band, or certify that the operations of its earth station shall conform to established coordination agreements between the operator(s) of the space station(s) with which the earth station is to communicate and the operator(s) of any other space station licensed to use the band.

[30 FR 7176, May 28, 1965, as amended at 36 FR 2562, Feb. 6, 1971; 38 FR 8573, Apr. 4, 1973; 42 FR 8329, Feb. 9, 1977; 44 FR 77167, Dec. 31, 1979; 50 FR 40862, Oct. 7, 1985; 58 FR 13419, Mar. 11, 1993; 58 FR 44904, Aug. 25, 1993; 59 FR 53329, Oct. 21, 1994; 61 FR 8477, Mar. 5, 1996; 61 FR 9945, Mar. 12, 1996; 61 FR 44181, Aug. 28, 1996; 62 FR 55531, Oct. 27, 1997; 65 FR 38325, June 20, 2000; 65 FR 59144, Oct. 4, 2000; 66 FR 10622, Feb. 16, 2001]

#### § 25.204 Power limits.

(a) In bands shared coequally with terrestrial radio communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station operating in frequency bands between 1 and 15 GHz, shall not exceed the following limits except as provided for in paragraph (c) of this section:

+40 dBW in any 4 KHz band for  $\theta: 0^\circ$   
 +40+3  $\theta$  dBW in any 4 KHz band for  $\theta: 0^\circ \leq \theta \leq 05^\circ$

where  $\theta$  is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

(b) In bands shared coequally with terrestrial radio-communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station operating in frequency bands above 15 GHz shall not exceed the following limits except as provided for in paragraph (c) of this section:

+64 dBW in any 1 MHz band for  $\theta: 0^\circ$   
 +64+3  $\theta$  dBW in any 1 MHz band for  $0^\circ < \theta < 5^\circ$

where  $\theta$  is as defined in paragraph (a) of this section.

(c) For angles of elevation of the horizon greater than  $5^\circ$  there shall be no restriction as to the equivalent isotropically radiated power transmitted by an earth station towards the horizon.

(d) Notwithstanding the e.i.r.p. and e.i.r.p. density limits specified in the station authorization, each earth station transmission shall be conducted at the lowest power level that will provide the required signal quality as indicated in the application and further amended by coordination agreements.

(e) For operations at frequencies above 10 GHz, earth station operators may exceed the uplink e.i.r.p. and e.i.r.p. density limits specified in the station authorization under the conditions of uplink fading due to precipitation by an amount not to exceed 1 dB above the actual amount of monitored excess attenuation over clear sky propagation conditions. The e.i.r.p. levels shall be returned to normal as soon as the attenuating weather pattern subsides. The maximum power level for power control purposes shall be coordinated between and among adjacent satellite operators.

(f) In the band 13.75–14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. The e.i.r.p. density of emissions from any earth station in the FSS operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in any 6 MHz band from 13.77 to 13.78 GHz. The e.i.r.p. density of emissions from any earth station in the FSS operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in any 6 MHz band from 13.77 to 13.78 GHz. Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power flux-density at the FSS space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions.

(g) All earth stations in the Fixed Satellite Service in the 20/30 GHz band shall employ uplink adaptive power control or other methods of fade compensation such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing

## § 25.205

the level of mutual interference between networks.

[48 FR 40255, Sept. 6, 1983, as amended at 58 FR 13420, Mar. 11, 1993; 61 FR 52307, Oct. 7, 1996; 62 FR 61457, Nov. 18, 1997; 66 FR 10623, Feb. 16, 2001]

### § 25.205 Minimum angle of antenna elevation.

Earth station antennas shall not normally be authorized for transmission at angles less than 5° measured from the horizontal plane to the direction of maximum radiation. However, upon a showing that the transmission path will be seaward and away from land masses or upon special showing of need for lower angles by the applicant, the Commission will consider authorizing transmissions at angles between 3° and 5° in the pertinent directions. In certain instances, it may be necessary to specify minimum angles greater than 5° because of interference considerations.

[48 FR 40255, Sept. 6, 1983]

### § 25.206 Station identification.

The requirement for transmission of station identification is waived for all radio stations licensed under this part with the exception of satellite uplinks carrying broadband video information which are required to incorporate ATIS in accordance with the provisions set forth under § 25.308 of these rules.

[55 FR 21551, May 25, 1990]

### § 25.207 Cessation of emissions.

Space stations shall be made capable of ceasing radio emissions by the use of appropriate devices (battery life, timing devices, ground command, etc.) that will ensure definite cessation of emissions.

### § 25.208 Power flux density limits.

(a) In the band 3700–4200 MHz, the power flux density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values:

- 152 dB(W/m<sup>2</sup>) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;
- 152+( $\delta$ –5)/2 dB(W/m<sup>2</sup>) in any 4 kHz band for angles of arrival  $\delta$  (in degrees) between 5

## 47 CFR Ch. I (10–1–04 Edition)

- and 25 degrees above the horizontal plane; and
- 142 dB(W/m<sup>2</sup>) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane

These limits relate to the power flux density which would be obtained under assumed free-space propagation conditions.

(b) In the bands 10.95–11.2 and 11.45–11.7 GHz for GSO FSS space stations and 10.7–11.7 GHz for NGSO FSS space stations, the power flux-density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the lower of the following values:

- (1) –150 dB(W/m<sup>2</sup>) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane; –150 + ( $\delta$ –5)/2 dB(W/m<sup>2</sup>) in any 4 kHz band for angles of arrival ( $\delta$ ) (in degrees) between 5 and 25 degrees above the horizontal plane; and –140 dB(W/m<sup>2</sup>) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane; or

- (2) –126 dB(W/m<sup>2</sup>) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane; –126 + ( $\delta$ –5)/2 dB(W/m<sup>2</sup>) in any 1 MHz band for angles of arrival ( $\delta$ ) (in degrees) between 5 and 25 degrees above the horizontal plane; and –116 dB(W/m<sup>2</sup>) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

NOTE TO PARAGRAPH (b): These limits relate to the power flux density, which would be obtained under assumed free-space propagation conditions.

(c) In the 18.3–18.8 GHz, 19.3–19.7 GHz, 22.55–23.00 GHz, 23.00–23.55 GHz, and 24.45–24.75 GHz frequency bands, the power flux-density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values:

- (1) –115 dB (W/m<sup>2</sup>) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.
- (2) –115 + 0.5 (d–5) dB (W/m<sup>2</sup>) in any 1 MHz band for angles of arrival d (in degrees) between 5 and 25 degrees above the horizontal plane.